"A COMPARITIVE STUDY ON THE EFFICACY OF FUNCTIONAL TASK INTERVENTION AND BOBATH INTERVENTION ON PATIENTS WITH IMPAIRED GAIT FUNCTON - IN STROKE POPULATION"

A Dissertation Submitted in the partial fulfillment of the requirement for the Degree of

MASTER OF PHYSIOTHERAPY

With specialization in

ADVANCED PHYSIOTHERAPY IN NEUROLOGY

Submitted by

(Reg. No: 27082404)

Submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

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SHANMUGA COLLEGE OF PHYSIOTHERAPY

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SHANMUGA COLLEGE OF PHYSIOTHERAPY

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SALEM.

CERTIFICATE

This is to certify that the project entitled a report on **"A COMPARITIVE STUDY ON THE EFFICACY OF FUNCTIONAL TASK INTERVENTION AND BOBATH INTERVENTION ON PATIENTS WITH IMPAIRED GAIT FUNCTON - IN STROKE POPULATION"** submitted by **(REG No: 27082404)** is a bonafide work done in the partial fulfillment of requirement for the **MASTER OF PHYSIOTHERAPY** course with Advanced Physiotherapy in Neurology as Specialization of The Tamilnadu Dr. M.G.R. Medical University, Chennai -32.

Guide **Principal**

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“A COMPARITIVE STUDY ON THE EFFICACY OF FUNCTIONAL TASK INTERVENTION AND BOBATH INTERVENTION ON PATIENTS WITH IMPAIRED GAIT FUNCTON - IN STROKE POPULATION”

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External Examiner:

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1.INTRODUCTION

Stroke is defined as a rapidly developed clinical signs of focal disturbance of cerebral function, lasting more than 24 hours (or) leading to death with no apparent cause other than that of vascular origin (WHO).

Stroke is one of the third leading causes of death. It makes an important contribution to morbidity, mortality and disability in developed as well as developing countries. Although the prevalence of stroke appears to be comparatively less in India than in developed countries, it is likely to increase proportionally with the increase in life expectancy. The proportion of strokes in the young is significantly more in India than in developed countries. Recent survey estimates that stroke mortality rate in India is 73 per lakh population has been reported by Barucha, N.E. and Kuruvilla, T...

Stroke is a acute severe manifestation of cerebro-vascular disease. The disturbance of cerebral function is caused by 3 morphological abnormalities, i.e. stenosis, occlusion or rupture of the arteries. Dysfunction of the brain (neurological deficit) manifests itself by various neurological signs and symptoms that are related to the extent of lesion area involved and the underlying causes. These include coma, hemiplegia, monoplegia, speech disturbances, cranial nerve paresis, etc.

A variety of mechanisms can account for improvements, that follow cerebral injuries are as follow

A: Network plasticity.

1. Recovery of neuronal excitability.
2. Activity in partially spared pathways.
3. Alternate behavioral strategies.
4. Representational mutability of neuronal assemblies.
5. Recruitment of parallel and subcomponent pathways.
6. Dependence on task related stimulation.

B: Neuronal plasticity.

1. Altered efficacy of synaptic activity.
2. Synaptic sprouting.
3. Axonal and Dendritic regeneration.
4. Remyelination.
5. Transsynaptic degeneration.
6. Ion channel changes on fibers for impulse conduction.
7. Action of neurotransmitters and neuromodulators.

Types of stroke:

Ischemic stroke: The most common type of stroke accounting for almost 80% of all strokes is caused by a clot or other blockage within an artery leading to the brain. It can further be divided into two main types.

a) Thrombotic.

b) Embolic.

Hemorrhagic stroke: Intracerebral hemorrhage is less common than cerebral ischemia, but has a worse prognosis. It occurs when a diseased blood vessel within the brain bursts, allowing blood to leak inside the brain. The sudden increase in pressure within the brain can cause damage to the brain cells surrounding the blood. If the amount of blood increases rapidly, the sudden build up in pressure can lead to unconsciousness or death. Intracerebral hemorrhage usually occurs in selected parts of the brain including the basal ganglia, cerebellum, brainstem or cortex.

Subarachnoid hemorrhage: It occurs when a blood vessel just outside the brain ruptures. The area of the skull surrounding the brain rapidly fills with blood.

Stroke has been identified as the most prevalent diagnosis among adults who fall due to Balance deficits. Balance is defined as the ability to maintain the body’s center of mass over its base of support. Balance problems are

thought to be common after stroke and they have been implicated in the poor recovery of activities of daily living (ADL) and mobility and an increased risk of falls. Factors such as the inability to walk, visuospatial deficits and apraxia, impulsivity, slowed response times as well as selective and divided attention deficits have been linked to balance impairments and increased fall risk among people with stroke.

Balance is diminished in people with Hemiplegia and Hemiparesis. Postural sway for patients with hemiplegia can be twice that of their age matched peers. Symmetry of weight bearing is also impaired following stroke, with patients bearing as much as 61%-80% of their body weight though their nonparietic lower extremity. In addition, hemiplegia can cause a reduction in patient's limits of stability, which is defined as the maximal distance that an individual can shift his or her weight in any direction without loss of balance.

Deficits in posture and balance are often seen after a middle cerebral artery (MCA) Stroke. This is most apparent during the acute phase following a stroke when patients may be unable to stand or walk, but chronic deficits are also seen that may contribute to falls and immobility.

The subjects with stroke commonly present with lower extremity extensor synergy with eqinovarus positioning of the foot and ankle complex, sustained plantar flexion of the involved side. Notable gait deviations include weight transfer on the lateral of the foot, knee hyperextension, limitations to functional hip flexion, and sustained pelvic retraction. As a result, this

asymmetric gait pattern will produce decreased speed, decreased support time on the involved limb, decreased step length on the involved limb, decreased cadence, decreased weight transfer though the limb, and increased energy costs.

Subjects with stroke have significantly slower walking speed, stride length and cycle duration than normal subjects. The range of average walking speed reported for hemiplegic subjects is 0.2-0.7 meters per sec.

Walking is often the prime target of rehabilitation because of its importance to functional independence and a key ingredient in functional competency. Several studies have clearly demonstrated that walking velocity is a key measure for the analysis of human gait. Walking velocity is the rate of linear forward motion of the body, which can be measured in meters/ sec.

Walking velocity = distance walked/ time

Therefore speed also has been widely used as a measure of patient status and treatment efficacy in clinical care and in research studies.

Rehabilitation treatment programs include the need to improve self-care and mobility skills. After a CVA, subjects benefit from participation in effective treatment programs aimed at improving balance, walking ability, independence and overall quality of life. Decreased cognitive abilities often interfere with the development or retraining of motor programs.

Bobath considered abnormal co-ordination of movement patterns and abnormal tone to be the main problems in hemiplegia. Bobath's concept believe that abnormal tone which can be lower or higher than normal, influences the patient's movement patterns adversely. Normalizing tone is seen as necessary preparation for practicing functional activities such as walking Gait re-education based on the Bobath concept uses techniques aimed at the normalization of muscle and postural tone, facilitation of more normal movement patterns in the trunk, pelvis and limbs, and facilitation of the act of walking.

Task related training approach views the patient as an active participant. The goal in stroke rehabilitation is to improve functional performance by developing effective strategies for approaching and mastering motor challenges of new activities may wish to perform in the future. Instead of training specific movement without functional goal, patients in Task Related Training perform movements with specific task.

In my study I have chosen, Bobath Intervention and Functional Task Intervention as treatment technique for stroke patients and Timed Up and Go Test as a parameter to determine the efficiency of techniques.

AIM OF THE STUDY

To compare the efficacy of Functional task intervention and Bobath intervention on patients with impaired gait function in stroke population.

OBJECTIVE OF THE STUDY

- To evaluate the effectiveness of Functional task intervention on patients with impaired gait function in stroke patients with Timed and go test.
- To evaluate the effectiveness of Bobath intervention on patients with impaired gait function in stroke patients with Timed up and go test.
- To compare the effectiveness of Functional task intervention and Bobath intervention on patients with impaired gait function in stroke patients with Timed and go test.

NULL HYPOTHESIS:

There is no significant difference between the effectiveness of Functional task intervention and Bobath intervention.

ALTERNATE HYPOTHESIS:

There is significant difference between the effectiveness of Functional task intervention and Bobath intervention.

1. REVIEW OF LITERATURE

❖ **DEAN CM, RICHARDS CL, MALOUIN F, et. al., (2000)**

Conducted a randomized, controlled pilot trial study on "Task related training performance of lower limb tasks in chronic stroke:" in 36 patients. Outcomes are measured by sit to stand and step test. Results showed that the Task related training gives better results in the loco motor function on chronic stroke.

❖ **LANGHAMMER B,STANGHELLE JK, et.al.,(2001)**

Conducted a randomized controlled study of patients with acute first ever stroke given task related training and Bobath respectively. Outcome measures are by motor assessment scale, the Barthel ADL index and the Timed up and Go test (TUG) were used .Results provided evidence that treatment using the Task related training is preferably to that using the Bobath Programme in the acute rehabilitation of stroke patients.

❖ **SALBACH NM,MAYO NE, et..,(2005)**

Conducted a randomized controlled trial study with a sample size of 91 individuals. The functional task intervention lasts for 6 weeks provide three times a week. Outcome measures were taken by Activities-specific Balance confidence, Six minute walk test, 5-m walk, Berg Balance Scale and Timed up and go test .At the end of the study the result demonstrated that task oriented walking retraining enhances balances self- efficacy with chronic stroke.

❖ **EICH HJ et.al.,**

Conducted a randomized controlled trial with fifty subjects and they received treadmill training and Bobath intervention .Out come measures are by Barthel Index. At the end of the study they concluded that Bobath intervention is better than Aerobic treadmill training.

❖ **NILSON L** et, al.,(2002)

Conducted a randomized controlled experimental study with 73 subjects and they received treadmill walking with body weight support for 30 minutes 5 days a week and the others received motor relearning programme on the ground for 30 minutes 5 days a week not including treadmill training. Main outcome measures are by Functional Independence measure (FIM), Functional Ambulation classification (FAC), Fugl Meyer's Stroke assessment and Berg's Scale. The results stated that Treadmill training with Body weight support shown better results.

❖ **PLUMMER P et, al.,**

Conducted a pilot study with seven adult chronic stroke hemiparesis and the treatment applied with loco motor training program combining walking using Body weight –supported Treadmill walking and manual assistance with over ground practice. A 12 week program weekly thrice comprised of 20 to 30 minutes of Body weight support treadmill walking with manual assistance followed by 10 to 15 minutes of over ground training to transfer skills. The

result stated that the interventions in this study promise for achieving functionally significant improvements in walking speed.

❖ **VAN VLIET PM et, al., (2005)**

Conducted a single randomized control study on 120 patients, they received Bobath intervention and movement science based treatment. The main outcome measure was Rivermead Motor Assessment and Motor Assessment Scale. The end of the Study showed there were no significant difference in the movement abilities or functional independence between patients receiving Bobath treatment or an movement science based treatment.

❖ **DIAS D, et, al., (2007)**

Conducted a randomized control with forty chronic post stroke hemiplegics having 40 minutes per sessions, five times a week for five weeks. They received Bobath treatment and gait trainer. The main outcome measures are Modified Ashworth Spasticity Scale (mASS), Fugl-Meyer Stroke Scale. Berg's Balance Scale (BBS), Rivermead mobility Index, Barthel index, Timed Up and go test (TUG), Six minute walk test and Step tests. The result shown that the subject had treatment with gait trainer showed better response.

❖ **GERGORY THIELMAN et. al., (2004)**

Conducted a study to compare the effectiveness of Task-related training versus Progressive resisted exercise on lower limb dysfunction in stroke

patients. 12 stroke patients were matched using motor assessment scale and they were randomly assigned to Task related training and Progressive resisted exercise. The intervention lasted for four weeks and the result says that the Task related training was effective than Progressive resisted exercise on improving gait function in stroke patients.

- **HUI-CHAN CW et. al.,(1993)**

Conducted a study to examine the reliability of Timed up and go test in 10 healthy subjects and 11 subjects with chronic stroke treated with task related training. The timed up and go test showed excellent reliability (ICC>.95). And the results from the study concluded that Timed up and go test is reliable measure for assessing the impairment in a population of patients undergoing rehabilitation following stroke.

- **SHAMAY S.M., CHRISTINA W.Y. AND HUI-CHAN, et. al., (2004)**

Conducted a study on “Transcutaneous Electrical Stimulation combined with task related training to improve lower limb functions in subjects with chronic stroke” with 27 patients having chronic stroke, for 20 sessions of a combined transcutaneous electrical nerve stimulation and task related training home-based program and the result showed significant increase in overall function after task related training.

- **GRAZINA KRUTULYTE et al,**

Conducted a study with 240 stroke patients found that task-oriented strategies represented by Motor Relearning Program, is preferable to treatment with facilitation/inhibition strategies, such as the Bobath Programme, in the rehabilitation of stroke patients.

- **SALBACH N M et al**,

Evaluated the efficacy of a task-oriented walking intervention in improving balance self-efficacy in 91 subjects with stroke. Task-oriented interventions targeting walking or upper extremity function were provided three times a week for six weeks. Results showed that task-oriented walking retraining enhances balance self-efficacy in community-dwelling individuals with chronic stroke.

- **DUNCAN P et al**,

Have reported that persons with sub acute stroke may benefit from highly structured intensive and progressive therapeutic exercise.

- **LENNON S et. al.,**

Conducted a case report described the use of gait re-education based on the Bobath concept to measure the changes that occurred in the gait of 2 patients with hemiplegia. These cases demonstrated that recovery of more normal movement patterns and functional ability.

- **YAVUZER G et. al.,**

Conducted a randomized controlled study with 41 patients investigated the effects of balance training on gait late after stroke and concluded that balance training by task related training along with conventional inpatient stroke rehabilitation programme is beneficial in improving postural control.

- **BERG K, WOOD-DAUPHINEE S, et.al.,**

Conducted a psychometric study to assess the reliability of the Balance Scale with 113 elderly residents and 70 stroke patients. The results supported the use of the Balance Scale.

- **STEVENSON T J et.al.,**

Conducted the change in patients with stroke using the Timed up and Go Test which was designed to help determine change in functional standing balance.

- **Gladstone D J, Danells C J, et.al.,**

Reported that Fugl-Meyer Motor Scale is recommended highly as a clinical and research tool for evaluating changes in motor impairment following stroke.

❖ **SUZUKI K et.al.,**

Conducted a study found the determinants of maximum walking speed in hemiparetic stroke patients. Measurement of maximum walking speed for 8 or 10 m distance has been used to document walking capacity and to predict functional state in neurologically impaired patients including stroke.

❖ **POHL P S, DUNCAN P et.al.,**

Conducted in a study with 72 post stroke subjects evaluated the influence of stroke-related impairments on performance in six-minute walk test. The results of this study demonstrated that performance in the six-minute walk test for stroke survivors is influenced by the motor impairment of the affected lower limb and balance and also even with stroke -related neuromuscular impairments.

❖ **ENG J J, CHU K S et.al.,**

Conducted a study to determine the relationship between Functional walk tests and measures of exertion (perceived and myocardial) in addition to impairment in individuals with stroke and conducted that both exertion (RPP or HR) and distance can be measured if the functional walk test is used to assess performance of an individual over time.

- **GRACE J et al**,

Conducted two studies with the Folstein mini-mental state examination and Modified mini-mental state examination to examine the usefulness of this screening tool in stroke population with 147-stroke subjects.

- **YANG Y R et al,**

Examined the effectiveness of walking training on gait outcome of 25 patients post stroke and demonstrated that gait pattern could be improved from task related training.

2. MATERIALS AND METHODOLOGY

MATERIALS:

- Arm rest Chairs
- Stop watch
- Balance beam
- Tape
- Tape measure
- Marking tools
- Timed up and go chart

METHODOLOGY

Study Design:

Experimental -comparative study.

Study Setting:

The study was conducted at the Department of Physiotherapy, Shanmuga Institute of Medical Sciences, College of Physiotherapy, Salem, under the supervision of concerned authority.

Study Sampling:

A total of 10 patients selected by simple purposive random sampling methods after giving due consideration to inclusion/exclusion criteria were equally divided into two groups as A and B.

Study Duration

6 weeks

INCLUSION CRITERIA:

- Stroke patient(5-18 months duration after onset)
- Age limit 45-65 years
- Sex (both male and female)
- Ability to comprehend the instructions for testing procedures.

EXCLUSION CRITERIA:

- Bilateral stroke.
- Mental dysfunction.
- In cooperative patients.
- Cognitive and perceptual dysfunction.
- Visual and auditory impairment.
- Orthopedic disorders that impair ambulation.

SELECTION CRITERIA:

- MRI findings.
- Clinical evaluation of patients.

PARAMETER:

Timed up and go test:

This is a stroke assessment instrument organized into seven continuous task given for the subjects.

Patient position:

The subject is asked to sit correctly in a chair with arms, the subject's back should resting on the back of the chair. The chair should be stable and positioned such that it will not move when the subject moves from sitting to standing.

Task position:

Place a piece of tape or other marker on the floor 3 meters away from the chair so that it is easily seen by the subject.

Task Procedure:

The patients are instructed in the word "Go" you will stand up, walk about three meters come back to the chair and sit down, they must walk in

normal pace for about six meters to and fro. Go and Stop instruction is given at starting and end of the assessment.

Results correlate with Gait speed, balance, functional level, the ability to go out, the subjects who completes in less than 10 seconds is normal, less than 20 seconds of good mobility can go outside alone as mobile and requires no gait aid less than 30 seconds will have some problems, cannot go outside alone, requires a gait aid.

Fig .1. Timed Up And Go Test

Timed Up and Go (TUG) Test

Name : **D.O.B:**

Activities	**Comments and Date**	
Stand up		
Stand momentarily		
Walk 3 meters		
Turn		
Walk 3 meters		
Turn		
Sit down		
Time to complete the Task		
Signature of the assessor		

TREATMENT TECHNIQUE

FUNCTIONAL TASK INTERVENTION

In the functional task intervention the subjects are properly instructed about the task and instructed to perform each task five minutes and given interval of five minutes between tasks.

I) Standing up and walk

Patient Position:

Patient seated in an arm rest chair in front of the therapist.

Task Position:

In the treatment room there are four standard armchairs placed at four corners.

Task procedure:

Five minutes of repeatedly standing up and walking to the chair directly in the front, sitting then standing up and walking to the chair on the left.

Progression:

From using the chair with arms can be replaced with armless chairs.

II) Step-ups

Patient position

The patient is asked to stand in front of the steps in the treatment room.

Task procedure

Five minutes of placing each foot alternatively on a step.

Progression

This can be made to a higher step, decreasing upper extremity support.

3) Balance beam

Patient position

The patient is asked to stand and be comfortable to do the tasks in the treatment room.

Task procedure

Five minutes of walking forwards, side wards and backwards between two parallel lines 20 cms apart.

Progression

Lateral stepping on the floor, feet crossing over in front or in back and then alternatively.

Treatment Duration

30 minutes /session

5 times /week

Fig .2 Functional task Intervention

BOBATH INTERVENTION:

The patients were much more concentrated in gait specific activities. They include working on different phase of gait or walking with the assistance of therapist. Proper instructions were given to the patients .The intervention includes phases

1) Stance phase re-education

2) Swing phase re-education

Stance phase re-education:

The treatment procedure is to gain balance while walking and to train walking. They include stepping with unaffected lower limb forward, stepping with the unaffected lower limb backward and stepping the unaffected lower limb sideways.

Swing phase re-education

The treatment procedure is to train the subject in walking and to help in proper placement of foot they include stepping with the affected lower limb and walking practice.

Treatment Duration:

- 30 minutes/session.
- 5 times/week.

Fig .3 Bobath Intervention

STATISTICAL TOOL:

The statistical tool used in this study were paired t-test and unpaired t-test.

The paired t-test used to find out a statistical significance between pre-test and post-test of patients treated with functional task intervention and Bobath interventions on group A and group B individually.

Paired t-test:

$$S = \sqrt{\frac{\sum d^2 - (\sum d)^2/n}{n-1}}$$

$$t = \frac{\bar{d}\sqrt{n}}{s}$$

$\bar{d}$ = mean difference

n= total number of subjects

s=standard deviation.

Unpaired t-test

The unpaired t-test was used to compare the statistically significant difference between Group A and Group B.

The unpaired t-test is used to compare the statistical significant between Group A and Group B.

$$S = \sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1 + n_2 - 2}}$$

N_1=total number of subjects in Group A

N_2=mean difference between pretest/post test Group B.

$$t = \frac{|\bar{x}_1 - \bar{x}_2|}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$\bar{x}_1$ = mean difference between pre-test/post-test of Group A.

$\bar{x}_2$= mean difference between pre-test/post-test of Group B.

4. DATA PRESENTATION

Table-1

(BASED ON TIMED UP AND GO TEST)

Serial No	Group A (Functional task intervention)	
	Pre-Test (in seconds)	Post-Test (in seconds)
1.	32.6	14.5
2.	30.3	13.4
3.	34.8	15.7
4.	25.5	10.3
5.	27.7	11.5

Table-2

(BASED ON TIMED UP AND GO TEST)

Serial No	Group B (Bobath intervention)	
	Pre-Test (in seconds)	**Post-Test (in second)**
1.	30.5	17.6
2.	26.4	14.3
3.	33.7	20.1
4.	32.3	18.5
5.	34.5	19.7

5. DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data's collected from 10 patients of stroke. The values of Timed up and go test is used to compare the pre-test versus post-test values in response to functional task intervention and Bobath intervention.

Table -3

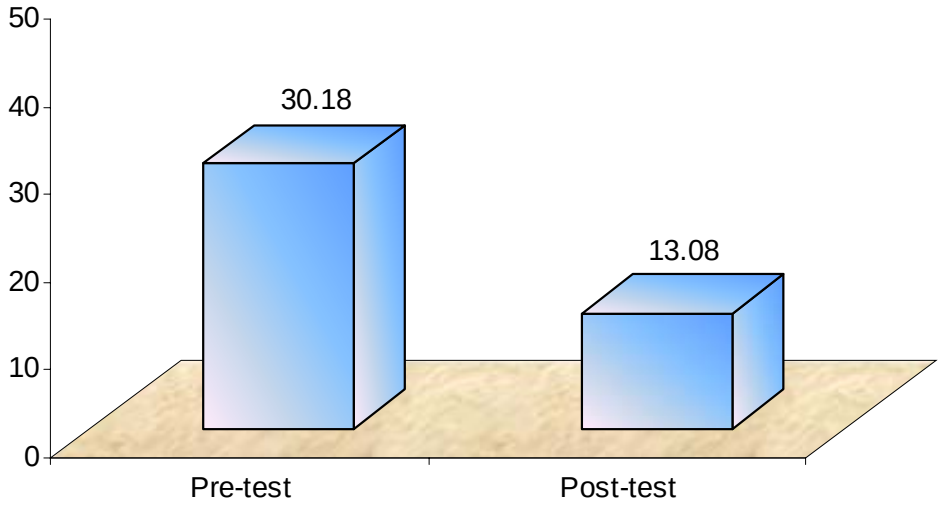
Pre-test versus post-test values of Group A

S. No	Test	Mean	Mean Difference	SD	Paired t-test
1.	Pre-test	30.18	17.10	3.72	24.864
2.	Post-test	13.08		2.19	

Table- 3 shows the comparative mean value, mean difference, standard deviation and Paired t-value between Pre versus post-test of group A

It explains,

The paired t value of 24.864 is greater than the tabulated t value2.78, which showed that there is statistical significant difference at 0.05 levels between pre versus post-test results. The pre-test mean is 30.18 and the post-test mean is 13.08 and their mean difference is 17.10, which is shown in the values of timed up and go test in response to functional task intervention after 6 weeks of treatment.



Graph-1 represents the mean value Timed up and go test between Pre-test and post-test for Group A.

Table-4

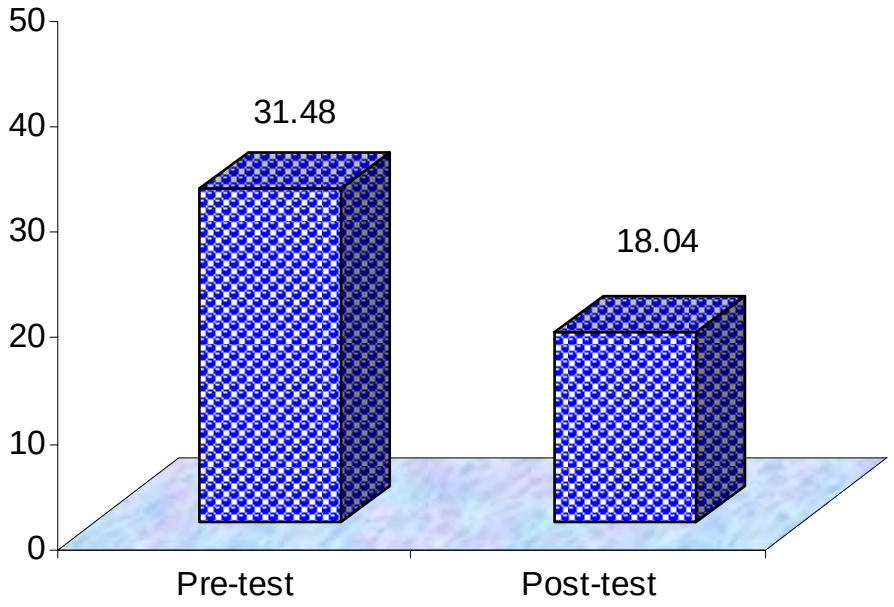
Pre-test versus post-test values of Group B

S. No	Test	Mean	Mean Difference	SD	Paired t-test
1.	Pre-test	31.48	13.44	3.22	29.71
2.	Post-test	18.04		2.31	

Table-4 shows the comparative mean value, mean difference, standard deviation and paired t-test value between pre-test versus post-test of Group B.

It explains,

The paired t-value of 29.71 is greater than tabulated t-value 2.78, which showed that there is statistical significant difference at 0.05 levels between pre versus post-test results. The pre-test mean is 31.48 and the post test mean is 18.04 and the mean difference is 13.44, which is shown increase in the values of Timed up and go test in response to Bobath intervention after 6 weeks.



Graph-2 represents the mean value of timed up and go test between Pre-test and post-test for Group B.

Table-5

Mean test value of group A and group B

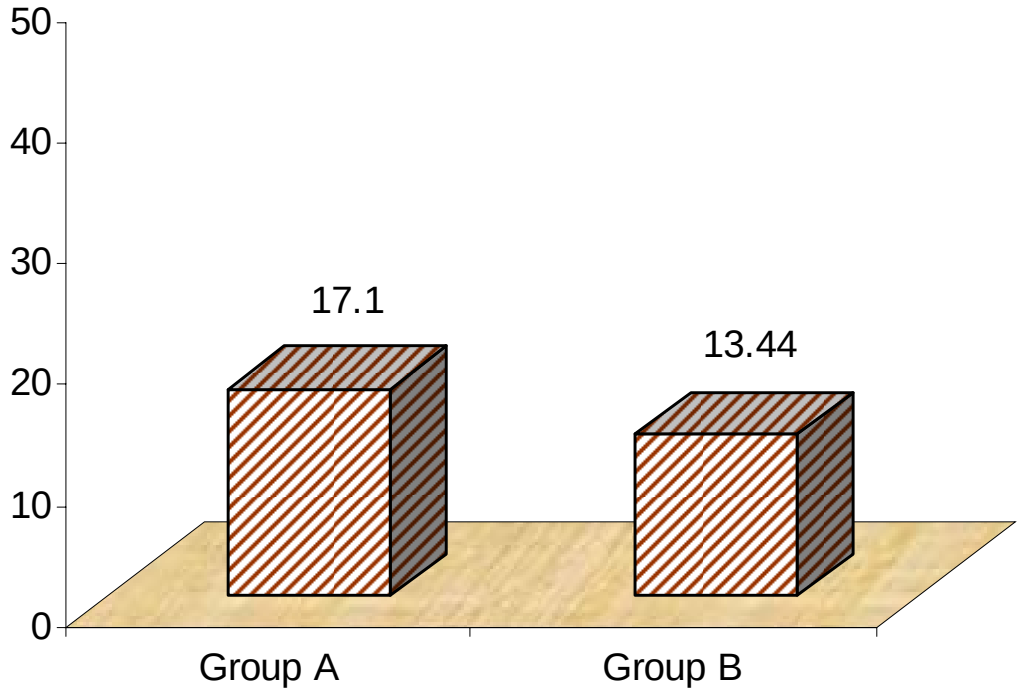
S. No	Test	Mean	Mean Difference	S.D	Unpaired t-test
1.	Group A	17.10	3.66	1.53	3.93
2.	Group B	13.44		1.01	

Table -5 shows the comparative mean value, mean difference, standard deviation and unpaired t-test value of group A and Group B.

It explains,

The unpaired t-test value of 3.93 is greater than tabulated value 2.31, which shown that there is significantly difference at 0.05 level between mean difference Group A and Group B. the pre-test versus post-test mean of Group A = 17.10, the pre-test versus post-test mean of group B = 13.44 and the mean difference of Group A and Group B = 3.66, which has shown in timed up and go test in response to treatment of Group A when compare to Group B.

Therefore the study rejects the Null hypothesis and accepting Alternate Hypothesis.



Graph-3 Represents the mean value of timed up and go test between Group A & Group B.

6. DISCUSSION

The aim of the study was to compare the effectiveness of **Functional task intervention and Bobath intervention as Treatment of stroke patients with** Timed up and go test as a parameter.

- **HUI-CHAN CW et. al.,(1993)**

Conducted a study to examine the reliability of Timed up and go test in 10 healthy subjects and 11 subjects with chronic stroke treated with task related training. The timed up and go test showed excellent reliability (ICC>.95). And the results from the study concluded that Timed up and go test is reliable measure for assessing the impairment in a population of patients undergoing rehabilitation following stroke.

Based on the above mentioned study “Timed up and go test” is used as a parameter in the present study.

The data analysis and interpretation of Timed up and go test in Group A patients

The paired t-test 24.864 was greater than the tabulated t-value 2.78 at 0.05 level of confidence, which showed that there was a statistically significant difference between pre-test and post-test with Timed up and go test. The pre-test mean was 30.18 and the post-test mean was 13.08. The mean difference

between pre-test versus post-test was 17.10 which showed that there was increase in Timed up and go test that results in improvement of Group A patients.

- **SALBACH NM,MAYO NE, et..,(2005)**

Conducted a randomized controlled trial study with a sample size of 91 individuals. The functional task intervention lasts for 6 weeks provide three times a week. Outcome measures were taken by Activities-specific Balance confidence, Six minute walk test, 5-m walk, Berg Balance Scale and Timed up and go test .at the end of the study the result demonstrated that task oriented walking retraining enhances balances self- efficacy with chronic stroke.

The data analysis and interpretation of Timed up and go test in Group B patients

The paired t-test 29.71 is greater than the tabulated t-value 2.78 at 0.05 level of confidence, which showed that there was a statistically significant difference in Timed up and go test between pre-test and post-test. The pre-test mean was 31.48 and the post-test mean was 18.04. The mean difference between pre-test versus post-test was 13.44 which showed that there was a increase in Timed up and go test that results in improvement of Group B patients.

❖ **EICH HJ et.al.,**

Conducted a randomized controlled trial with fifty subjects and they received treadmill training and Bobath intervention .Out come measures are by Barthel Index. At the end of the study they concluded that Bobath intervention is better than Aerobic treadmill training.

The data analysis and Timed up and go test of Group A and group B patients

The unpaired t-test value 3.93 was greater than the tabulated t-value 2.31 at 0.05 level of confidence, which showed that there was a statistically difference between pre-test versus post-test results of Group A and Group B. The mean value of Group A 17.10, Group B 13.44 and the mean difference was 3.66 which showed that there was significant increase in Timed up and go test and its improvement in conditions of patients in Group A when compared to Group B in response to treatment.

Langhammer B, Stanghelle J K conducted a double- blinded randomized study of 61 patients with stroke, 33 patients in Group 1 (Task related training) and 28 patients in Group 2(Bobath). They concluded that intervention using the Task related training is preferable to that using the Bobath Programme in the rehabilitation of stroke.

The result of the study was similar to the present study in which **Task related training Group A has a greater improvement than Bobath intervention Group B.**

Therefore the study rejects the Null hypothesis **and accepting Alternate hypothesis.**

REASON FOR GREATER IMPROVEMENT IN GROUP A WHEN COMPARED TO GROUP B:

There is strong evidence that stroke patients benefit from early-organized multidisciplinary care and exercise programs in which functional tasks are directly and intensively trained. It has been shown that functional specificity and the progressive complexity of tasks being trained are the key variables of motor training and cortical reorganization.

The Bobath concept represents a theoretical framework in a reflex-hierarchical, the improvement in Bobath intervention might be due to activities, which are self- initiated and train postural adjustments and anticipation. In addition, these activities help the patient regain strength and control of the lower limbs, which might have enabled them to take more weight through the affected leg.

So it is important for an intervention not only to alleviate impairments but also to reduce disability. Improving strength without a concomitant impact at the activity level would thus not be considered a fully successful

intervention. It should not be seen as a replacement for effective Task Related Training. Rather, Resistance Training can be a significant adjunct in stroke rehabilitation. So the present study proved that Functional task-Related intervention produced greater outcomes in Functional Independence and Quality of Life.

7.SUMMARY AND CONCLUSION

SUMMARY:

The objective of the study was to compare the effectiveness of Functional task intervention and Bobath intervention on stroke patients with Timed Up and Go Test.

A total number of 10 subjects with stroke (5 months to 18 months) at the age group of 45-65 years were selected by simple purposive random sampling, after due consideration to the inclusion and exclusion criteria.

The total number of selected patients divided equally into Group A and Group B. Group A subjects were treated with Functional task intervention and Group B were treated with Bobath intervention.

The informed consents were obtained from the subjects individually.

Each subject was selected with clinical evaluation. The pre-test of Timed Up and Go test is done and recorded before the treatment programme. The post-tests were conducted after 6 weeks of the treatment programme of Functional task related training and Bobath intervention in stroke patients. The results were recorded by Timed Up and Go Test on every subject.

The paired t-test was used to compare the pre-test versus post-test values of Timed Up and Go Test in the group A and group B separately. The unpaired

t-test was used to compare the mean difference of the pre-test versus post-test of Timed Up and Go Test between group A and group B.

In the analysis and interpretation in Group A, the paired t-test value of Timed Up and Go Test between pre-test versus post-test value 24.864 was greater than the tabulated t-value ($p>2.78$) at 0.05 level of confidence. The pre-test versus post-test score with Timed Up and Go Test showed statistically marked significant increase.

In Group B, the paired t-test value of Timed Up and Go Test between pre-test versus post-test value 29.71 was greater than the tabulated t-value 2.78 at 0.05 level of confidence. The result showed that there was a statistically increase pre-test and post-test score on Timed Up and Go Test .

The unpaired t-value 3.93 was greater than the tabulated t-value 2.31 at 0.05 level of confidence which showed that there was statistically significant difference between pre-test versus post-test results of Group A and Group B. The mean value of Group A was 17.10 and Group B was 13.44 and their mean difference was 3.66 which showed that there was a significant increase in Timed Up and Go Test in Group A when compared to Group B in response to treatment.

In statistical analysis, the result of the study showed that there was improvement in Group A when compared to Group B subjects of stroke.

CONCLUSION:

The study concluded that Functional task intervention and Bobath intervention has beneficial effect on stroke patients based on Timed up and go test.

The result of the comparative study concluded that the Functional task intervention was effective treatment than Bobath intervention on stroke.

8. LIMITATIONS

- The study sample size was 10 patients with stroke. So the result of the study cannot be generalized over the whole stroke population.

- The age group 45-65 years in the study could not be generalized over the whole stroke population.

9. RECOMMENDATIONS

- Study with long term follow up and large sample size can be done.
- Dominant and non dominant involvement could be analyzed separately.
- The evaluation criteria for the selection of the sample should be relaxed for further generalization and other parameters can be used to assess upper limb function.
- Lower extremity is evaluated in this study, so further study can be done on upper extremity.

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CONSENT TO PARTICIPATE VOLUNTARY IN A RESEARCH INVESTIGATION

Department of Physiotherapy,

Shanmuga Institute of Medical Sciences,

Salem – 7, Tamilnadu.

Name :

Age :

Sex :

Occupation :

Address :

Declaration

I have fully understood the nature and purpose of the study. I accept to be a subject in this study and I declare that the above information is true to my knowledge.

Signature of the subject

Place :

Date :

1. APPENDIX

NEUROLOGICAL EVALUATION CHART

NAME :

AGE :

SEX :

OCCUPATION :

ADDRESS :

DATE OF ADMISSION :

DATE OF ASSESSMENT :

CHIEF COMPLAINTS :

HISTORY:

- Past medical history :
- Present medical history :
- Associated problems :

VITAL SIGNS:

- Blood pressure :
- Temperature :
- Pulse rate :
- Respiratory rate :

ON OBSERVATION:

- Body built :
- Posture :
- Deformity :
- External appliances :
- Trophic changes :

ON EXAMINATION:

1. **MENTAL STATUS:**

A. Level of consciousness:

(Glascow Coma Scale)

B. Memory:

- Immediate recall : Present/Absent
- Short term : Present/Absent
- Long term : Present/Absent

C. Orientation:

(To Time, Place and Person)

D. Ability to Follow:

- **Instruction:**

(One, Two, Three Level Commands)

2. **HIGHER CORTICAL FUNCTION:**

- Calculation ability :
- Abstract reasoning :

- Attention span :
- Learning Deficits :

3. COMMUNICATION:

- Aphasic :
- Non Aphasic :

4. SENSATION:

- Superficial :
- Proprioceptive :
- Hearing :
- Vision :
- Acuity :
- Peripheral vision :
- Depth perception :
- Hemianospia :

5. PERCEPTION:

- Agonosia :
- Apraxia :
- Spatial relation :
- Body image :
- Body scheme :

6. **JOINT MOBILITY:**

- Range of motion :
- Joint play :
- Soft tissue compliance :
- Fixed Contracture :

7. **MOTOR CONTROL:**

A. TONE:

B. REFLEXES:

- Superficial reflex :
- Deep tendon reflex :
- Primitive reflex :
- Tonic reflexes :

C. VOLUANTRY MOVEMENT PATTERNS:

- Synergy dominance :
- Selective movement control :

D. COORDINATION :

E. BALANCE :

F. GAIT :

G. HAND FUNCTION :

8. **BLADDER & BOWEL FUNCTION:**

9. **ACTIVITIES OF DAILY LIVING (ADL):**

Timed Up and Go (TUG) Test

1. Equipment: arm chair, tape measure, tape, stop watch.

2. Begin the test with the subject sitting correctly in a chair with arms, the subject's back should resting on the back of the chair. The chair should be stable and positioned such that it will not move when the subject moves from sitting to standing.

3. Place a piece of tape or other marker on the floor 3 meters away from the chair so that it is easily seen by the subject.

4. Instructions : "On the word *GO* you will stand up, walk to the line on the floor, turn around and walk back to the chair and sit down. Walk at your regular pace.

5. Start timing on the word "*GO*" and stop timing when the subject is seated again correctly in the chair with their back resting on the back of the chair.

6. Timing begins when the person starts to rise from the chair and ends when he or she returns to the chair and sits down where the distance is 6 metres.

7. The subject wears their regular footwear, may use any gait aid that they normally use during ambulation, but may not be assisted by another person. There is no time limit. They may stop and rest (but not sit down) if they need to.

8. The subject should be given a practice trial that is not timed before testing.

9. Results correlate with gait speed, balance, functional level, the ability to go out, and can follow change over time.

10. Interpretation < 10 seconds = normal < 20 seconds = good mobility, can go out alone, mobile without a gait aid. < 30 seconds = problems, cannot go outside alone, requires a gait aid. A score of more than or equal to fourteen seconds has been shown to indicate high risk of falls.

Timed Up and Go (TUG) Test

Name : **D.O.B:**

Activities	**Comments and Date**	
Stand up		
Stand momentarily		
Walk 3 metres		
Turn		
Walk 3 metres		
Turn		
Sit down		
Time to complete the Task		
Signature of the assessor		